DOCUMENT RESUME

ED 170 025 PS 010 493

AUTHOR Ives, William, Comp.
TITLE The Visual Arts and Cognitive Development: An Annotated Bibliography.
INSTITUTION Harvard Univ., Cambridge, Mass. Graduate School of Education.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
PUB DATE [79]
GRANT NIE-G-78-0031
NOTE 42p.; Not available in hard copy due to print quality of the original

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS *Art Appreciation; Art Education; Artists; Child Development; Children; *Childrens Art; *Cognitive Development; *Creative Development; Imagery; *Perceptual Development; Pretend Play; Research; Symbolic Learning; *Visual Arts; Visual Perception

ABSTRACT

More than 300 citations of books, articles, and conference papers published primarily within the last 20 years are listed with brief descriptions. The works include discussions of developmental theory, art education, art criticism, aesthetics, and philosophy of science as well as experimental studies. Research topics cover aspects of cognition (perception, imagery, spatial relations, symbolization, representation), art (children's conceptions of art, development of artistic ability, style, art therapy, media comparisons, and so forth), and related areas of developmental research (including creativity, play, fantasy, role-taking, personality). Although material related to adult artists is included, the emphasis is on children. (SS)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED170025

U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

THE VISUAL ARTS AND COGNITIVE DEVELOPMENT: AN ANNOTATED BIBLIOGRAPHY

Compiled by William Ives
Harvard Project Zero and
Wheelock College

Author's address: Wheelock College
Graduate School
200 The Riverway
Boston, MA 02115

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

William Ives

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

PS 010493

Abrams, M. H. The mirror and the lamp. New York: Norton, 1958.

An important work on art criticism which divides the artistic process into the "work," the "artist," the "universe," and the "audience." This work has important implications for the psychology of art.

Alschuler, R. H., & Mattwick, L. W. Painting and personality. Chicago: University of Chicago Press, 1969.

A classic work, it attempts to use children's paintings to provide clinical insights into personality development.

Anderson, R. C., & Kulhavy, R. W. Imagery and prose learning. Journal of Educational Psychology, 1972, 63, No. 3, 242-243.

Arieti, S. Creativity: The magic synthesis. New York: Basic, 1976.

Arkell, R. N. Adults' representations of children's human figure drawings. Perceptual & Motor Skills, 1976, 43, 958.

Arnheim, R. Art and visual perception. Berkeley: University of California Press, 1954 and 1974.

Arnheim applies the theories of Gestalt psychology and his own profound insights to the visual arts in this classic work. He stresses the role of the medium in representation as he writes, "Representation never produces a replica of the object but its structural equivalent in a given medium" (1954, p. 162).

Also
by Arnheim:

Gestalt psychology and artistic form. In Whyte, L. L., Aspects of form. Bloomington, In.: Indiana University Press, 1951, 196-208.

Visual thinking. Berkeley: University of California Press, 1971.

Entropy and art. Berkeley: University of California Press, 1971.

Toward a psychology of art. University of California Press, 1972.

Barrett, M. D. & Light, P. H. Symbolism and intellectual realism in children's drawings. British Journal of Educational Psychology, June 1976, 46, (2), 198-202.

Barron, F. Artists in the making. New York: Seminar Press, 1972.

Studies the development of professional artists using a variety of techniques (reviewed by Arnheim in Contemporary Psychology, 1973, 18, 289-290.

Beck, J. The perception of surface color. Scientific American, 1975, 232, 62-75.

Presents several experiments which suggest that the perception of surface color is determined not only by the wave length of reflected light but also by surface composition and texture and the viewer's attitude.

Beittel, K. A case methodology for the study of the drawing process and the drawing series. U. S. Department of Health, Education and Welfare, Project No. 1-C-024, 1972.

Beittel explores phenomenological alternatives to traditional empirical research on the act of drawing. In the process he makes a sound philosophical argument for the preference of phenomenology over empirical science as a means of research in the arts. Beittel then reports on research he has conducted using phenomonological methods. This position is also presented by Beittel in: Alternatives for art education research: Inquiry into the making of art: W. C. Brown, Dubuque, Iowa, 1973.

Berger, P. & Luckman, T. The social construction of reality. Garden City, N.Y.: Anchor Books, 1967.

The book provides a social and psychological framework which is potentially useful for examining artistic development since it is not biased by predetermined developmental endstates. Reality is seen as being socially constructed by humans rather than being given or determined by ideal forms.

Berlyne, D. E. Aesthetics and psychobiology. New York: Appleton-Century-Crofts, 1971.

Berlyne, D. E. (Ed.) Studies in the new experimental aesthetics: Steps toward an objective psychology of aesthetic appreciation. New York: Wiley, 1974.

Berlyne pursues an experimental approach to aesthetic appreciation.

Berman, P. W. Young children's use of the frame of reference in construction of the horizontal, vertical, and oblique. Child Development, 1976, 47, 259-263.

Berman, P. W., Cunningham, J. G., & Harkulich, J. Construction of the horizontal, vertical, and oblique by young children: Failure to find the "oblique effect." Child Development, 1974, 45, 474-478.

Bernbaum, M., Goodnow, J. & Lehman, E. Relationships among perceptual-motor tasks: tracing and copying. Journal of Educational Psychology, 1974, 66, 731-735.

Bettelheim, J. The uses of enchantment: The meaning and importance of fairy tales. New York: Knopf, 1976.

Reviewed by H. Gardner, Semeotica, 1977.
Also reviewed by J. P. Murray in Contemporary Psychology, 1977, Vol. 22, No. 3.

Biber, B. Children's drawings: From lines to pictures. New York: Bank Street College of Education Publications, 1962.

A brief but well formulated introduction to the drawings of young children first written in the 1930's. Biber writes that a child's first pictures "should be regarded not only as the resultant of his unfolding mental concepts but also of his direct experience with a technique." She thus voices an early criticism also made by Arnheim and others of the use of drawings by such writers as Piaget, Luquet, DiLeo, Harris and Goodenough.

Billow, R. M. Metaphor: A review of the psychological literature. Psychological Bulletin, 1977, 84, No. 1, 81-92.

Bland, J. Art of the young child. New York: The Museum of Modern Art, 1968.

A well produced introduction to the art of children ages three to five. It includes the author's views on the fundamentals of art education and ways in which adults can be helpful to children. It would be particularly useful to parents and teachers who have not had much exposure to children's art.

Botvin, G. J. & Sutton-Smith, B. The development of structural complexity in children's fantasy narratives. Developmental Psychology, 1977, 13, No. 4, 377-388.

Brigham, D. Integrating art and cognitive learning in schools. Boston: Massachusetts College of Art, Center for Visual Learning, 1978.

"This paper presents a rationale for the integration of art with other subjects. It provides examples of inductive teaching through art of interdisciplinary conceptual learning objectives as practiced in the Attleboro public school system."

Brittain, W. L. The effect of background shape on the ability of children to copy geometric forms. Child Development, December 1976, 47 (4), 1179-1181. (Abstract)

Brooks, P. H. The role of action lines in children's memory for pictures. Journal of Experimental Child Psychology, 1977, 23, 98-107.

Brown, R. M. An examination of visual and verbal coding processes in preschool children. Child Development, 1977, 48, 38-45.

Bruner, J. S., Jolly, A. & Sylva, K. (Eds.) Play - Its role in development and evolution. New York: Basic Books, 1976. (Contemporary Psychology, 1977, 4 - for a review)

Bryant, P. E. & Raz, I. Visual and tactual perception of shape by young children. Developmental Psychology, 1975, 11, 525-526.

Butterworth, G. The child's representation of the world. New York: Plenum, 1977.

Carr, W. & Francke, A. W. Culture and the development of vision. Journal of the American Optometric Association, 1976, 47, 14-41.

Carroll, J. M. & Bever, T. G. Segmentation in cinema perception. Science, March 1976, 191 (4231), 1053-1055.

Cassirer, E. An essay on man. New Haven: Yale University Press, 1944.

Cassirer, E. The philosophy of symbolic forms. (3 Vols.) New Haven: Yale University Press, 1955.

"Language and science are abbreviations of reality: art is an intensification of reality. Language and science depend upon one and the same process of abstraction; art may be described as a continuous process of concretation." (1944)

Celotta, B. Knowledge of the human figure as measured by two tasks. Developmental Psychology, 1973, 8, pp. 377-381.

Conceptual knowledge of the human figure was measured by a Manikin Construction Task and a Figure Drawing Task. Higher scores in terms of representational detail and structure were found on the Manikin Construction Task for children ages 3 to 11.

Chipman, S. F. & Mendelson, M. J. The development of sensitivity to visual structure. Journal of Experimental Child Psychology, 1975, 20, 411-429.

Chipp, H. B. Theories of modern art. Berkeley: University of California Press, 1968.

An excellent sourcebook for original statements by artists and critics.

Cohen, E. P. & Gainer, R. S. Art: Another language for learning. New York: Citation Press, 1976.

Craddick, R. A. Size of halloween witch drawings prior to, on, and after halloween. Perceptual and Motor Skills, 1963, 16, 235-238.

Cusack, N. Art therapy as an adjunct to primary therapy - A case study. Boston: Massachusetts College of Art, Center for Visual Learning, 1978.

"The paper describes an art therapy program at a treatment center for children and adolescents and presents an illustrated case study of art therapy as an adjunct to primary psychotherapy in the treatment of an eight year old boy."

Daedalus, 1960, Winter, "The visual arts today."

A special issue which includes articles by J. J. Gibson, Gombrich, and many others (edited by Kepes).

Daehler, M. W., Perlmutter, M., & Myers, N. A. Equivalence of pictures and objects for very young children. Child Development, 1976, 47, 96-102.

Davis, R. The fitness of names to drawings. A cross-cultural study in Tanganyika. British Journal of Psychology, 1961, 52, 259-268.

Presents evidence which supports the theory that purely structural similarities between sounds and shapes can be appreciated and used in naming.

Dean, A. L. The structure of imagery. Child Development, 1976 47(4), 949-958.

Deregowski, J. B. Drawing ability of Soli rural children: A note. The Journal of Social Psychology, 1972, 86, 311-312.

Deregowski, J. B. Coding and drawing of simple geometric stimuli by Bukusu schoolchildren in Kenya. Journal of Cross-Cultural Psychology, 1976, 7(2), 195-208.

Dewey, J. Art as experience. New York: Capricorn Books, 1934.

The educational philosopher who was an early promoter of open education and a major influence on educational thought today writes on his theories of aesthetics.

Di Leo, J. Young children and their drawings. New York: Bruner Mazel, 1970.

Di Leo presents a study of the development of children's drawings in the tradition of Piaget, Luquet, and Goodenough. The child draws what he knows and feels rather than simply reproducing what he sees. Therefore drawings can be used to gain access to children's thoughts and feelings. Di Leo presents the development of drawing in normal children and then includes a section on drawing as a diagnostic tool in treating disturbed children.

Dixon, D. & Saltz, E. The role of imagery in concept acquisition in lower-SES children. Child Development, 1977, 48, 288-291.

Douglas, N. K. & Schwartz, J. B. Increasing awareness of art ideas of young children through guided experiences with ceramics. Studies in Art Education, 1967, 8, 2-9.

Duffey, J. B., Ritter, D. R., & Fedner, M. Developmental test of visual-motor integration and the Goodenough Draw-A-Man Test as predictors of academic success. Perceptual & Motor Skills, 1976, 43(2), 543-546.

Ecker, D. Analyzing children's talk about art. Journal of Aesthetic Education, 1973, 7, 58-73.

Ehrenzweig, A. The hidden order of art. Frogmore, England: Paladin, 1970.

Eisner, E. (Ed.) The arts, human development, and education. Berkeley: McCutcheon, 1976.

Elkind, D. Perceptual development in children. American Scientist, 1975, 63(5), 533-541.

Emmett, K & Machamer, P. Perception: An annotated bibliography. New York: Garland, 1976.

Erikson, E. H. Toys and reasons: Stages in the ritualization of experience. New York: Norton, 1977.

Reviewed by C. S. Hall in Contemporary Psychology, 1977, 22, No. 9.

Feinburg, S. Combat Art. Learning, 1975, 1, 10-15.

An article on war pictures drawn by children in middle childhood.

Feinburg, S. G. Conceptual content and spatial characteristics in boys' and girls' drawings of fighting and helping. Studies in Art Education, 1977, 18, 2.

Fenson, L. The structure of one child's art from age three to four. Paper presented at the biannual meeting of the Society for Research in Child Development, New Orleans, March, 1977.

Fenson, L. & Kagan, J. The developmental progression of manipulative play in the first two years. Child Development, 1976, 47, 232-236.

Fenson, L, Sapper, V. & Minner, D. G. Attention and manipulative play in the one'year'old child. Child Development, 1974, 45, 757-764.

Flavell, J. The developmental psychology of Jean Piaget. New York: Van Nostrand, 1963.

An excellent summary of Piaget's theory in a more readable form than the original.

Fling, S. & Manosevitz, M. Sex typing in nursery school children's play interests. Developmental Psychology, 1972, 7, No. 2, 146-152.

Franklin, M. Non-verbal representation in young children: A cognitive perspective. Young Children, November 1972, 33-52.

"This paper is concerned with the emergence and early development of symbolic functioning in the non-verbal domains of representational gesture, use of objects in play, painting and modeling, and the understanding of graphic forms." p. 33. The paper also provides a good review of the literature with a comprehensive bibliography.

Freeman, N. H. Do children draw men with arms coming out of the head? Nature, 1975, 254(5499), 416-417.

Freeman, N. Childrens drawings: Cognitive aspects. Journal of Child Psychology & Psychiatry & Allied Disciplines, 1976, 17(4), 345-350.

Freeman, N., Eiser, C., & Sayers, J. Children's strategies in producing three-dimensional relationships on a two-dimensional surface. Journal of Experimental Child Psychology, 1977, 23, 305-314.

Freeman, N. H. & Hargreaves, S. Directed movements and the body-proportion effect in preschool children's human figure drawing. Quarterly Journal of Experimental Psychology, 1977, 29, 227-235.

Freeman, N., & Janikoun, R. Intellectual realism in children's drawings of a familiar object with distinctive features. Child Development, 1972, 43, 1116-1121.

A cup was presented to children with the defining feature (the handle) not visible and a non-defining feature (a painted flower) visible. There was a developmental tendency to stop including the handle and start including the flower between ages 7 and 8.

Freeman, N. H. Process and product in children's drawing. Perception, 1972, 1, 123-140.

Freinet, C. La methode naturelle: II. L'apprentissage du Dessin. Delachoux et Niestle, Neuchatel, Suisse, 1969.

Freinet studies the evolution of children's drawing. The book reviews the genesis of the drawing of men, houses, autos, birds, and horses in order to observe the difficulties encountered by the child and the manner in which these difficulties are overcome. Freinet promotes the natural (Rousseauian) method of art education and studies the free drawings of children in a non-scholastic milieu.

& Stephensen, M.B.

Friedman, S. L. Developmental changes in the understanding of implied motion in two-dimensional pictures. Child Development, 1975, 46, 773-778.

Fukurai, S. How can I make what I cannot see? New York: Van Nostrand Reinhold, 1974.

A record of the author's experiences teaching art to congenitally blind children in a Japanese school. The book demonstrates that blind children are capable of producing creative representational art works in both clay and paint.

Furth, H.G., Ross, B. M., & Youniss J. Operative understanding in reproductions of drawings. Child Development, 1974, 45, 63-70.

Gardner, H. Challenges for a Psychology of Art. Scientific Aesthetics, 1976, 1.

Gardner, H. From Node to Symbol. British Journal of Aesthetics. 1972, 12, 40-59.

Gardner, H. On the acquisition of first symbol systems. Studies in the Anthropology of Visual Communication, 1976, 22-37.

Gardner, H. Problem solving in the arts. Journal of Aesthetic Education, 1971, 5, 93-114.

Gardner, H. Senses, symbols, and operations: An organization of artistry. In D. Perkin's and B. Leondar (Eds.), The Arts and Cognition. Baltimore: John Hopkins University Press, 1977.

Gardner, H. The development of sensitivity to artistic styles. Journal of Aesthetics and Art Criticism, 1971, 4.

Gardner, H. The Arts and Human Development. New York: John Wiley & Sons, 1973.

The application of a synthesis of various theories of development such as those of Erikson, Piaget, Freud, Werner and the Gestalt theori to the development of an individual's ability to participate in the artistic process. The author makes a criticism of Piaget's use of scientific thinking as an ideal endstate in human development. The book includes a comprehensive review of previous research on children's development in music, literature, and the visual arts.

Gardner, H. Style sensitivity in children. Human Development, 1972, 15, 325-338.

Gardner, H. & Gardner, J. Children's literary skills. The Journal of Experimental Education, 1971, 39, 4.

Gardner, H., Howard, V., & Perkins, D. Symbol systems: A philosophical, psychological and educational investigation. In D. R. Olson (Ed.), Media and symbols: The forms of expression, communication and education. 73rd Yearbook of the National Society for the Study of Education. Chicago: University of Chicago Press, 1974.

Gardner, H., Winney, E., Bechhofer, R., & Wolf, D. The development of figurative language. In K. Nelson's (Ed.), Children's Language. New York: Gardner Press, 1977.

Gardner, H., Winner, E., & Kircher, M. Children's conceptions of the arts. The Journal of Aesthetic Education, 1975, 9:3, 60-77.

Gardner, H., Wolf, D., & Smith, A. Artistic symbols in early childhood. New York University Education Quarterly, 1975, 6:4, 13 21.

The authors discuss the individual nature of children's use of symbols and integrate both cognitive and affective aspects of symbol use. They also report findings of a preliminary study of symbolic activity using four mediums (clay, language, drawing and play) and four tasks (copy, complete, assemble and spontaneous). Children responded differently depending on the medium they used to perform each task.

Getzels, J., J., & Csikszentmihalyi, M. The Creative Vision: A Longitudinal Study of Problem Finding in Art. New York: John Wiley & Sons, 1976. (Reviewed by S.J. Ives in Journal of Aesthetics and Art Criticism, Fall, 1977.)

Ghislen, B., (Ed.). The Creative Process. New York: Mentor Books, 1952.

An anthology of thirty-eight original thinkers such as Einstein and Henry Moore discussing their personal creative processes.

Gibson, E. Principles of Perceptual Learning and Development. New York: Appleton-Century Crofts, 1969.

This book presents the perceptual theories of James and Eleanor Gibson applied to perceptual development. Perception is shaped by the structures of the environment and the young child gradually comes to differentiate stimuli in the environment. These views of the Gibsons stand in contrast to the constructionist views on perception held by Gombrich, Gregory, Kolers, Goodman, and others who argue that perception is shaped by internal mental processes rather than the external environment.

Gibson, J. J. The Perception of the Visual World. Cambridge, Massachusetts: Riverside Press, 1950.

Gibson, J. J. The Senses Considered as Perceptual Systems. Boston: Houghton Mifflin, 1966.

Goethe, J. W. Theory of Colors. London: John Murray, 1840. (Reprinted by M.I.T. Press, 1970 in its original form).

"Can you lend me the Theory of Colors for a few weeks? It is an important work. His last things are insipid." Beethoven, 1820 (quote on the cover.)

Golomb, C. Evolution of the human figure in a three-dimensional medium. Developmental Psychology, 1972, 6:3, 385-391.

Golomb, C. The effects of models, media and instructions. Child's Representation of the Human Figure: Genetic Psychology Monographs, 1973, 87, 197-251.

Golomb, C. Young Children's Painting and Sculpture. Cambridge, Massachusetts: Harvard University Press, 1974.

Golomb criticizes the concept of drawing as imitation and offers instead the position of Arnheim. She studies the representation of the human figure in various media. "The difference between verbal, graphic, plastic and puzzle representations suggests that each medium has its own laws and demands of articulation. What might be a satisfactory solution in one medium of representation might not be the case in another medium." 1973, 247.

Golomb, C., & Cornelius, C. B. Symbolic play and its cognitive significance. Developmental Psychology, 1977, 13, 246-252.

Gombrich, E. H., Hochberg, J. & Black, M. Art, Perception and Reality. Baltimore: John Hopkins University Press, 1970.

Three essays by an art historian, a psychologist and a philosopher on the question of understanding pictures.

Gombrich, E. H. Freud's aesthetics. Encounter, 1966, 26, 30-40.

Gombrich, E. H. Art and Illusion. Princeton, New Jersey: Princeton University Press, 1972.

Gombrich, E. H. The visual image. Scientific American, 1972, 83-96.

Gombrich explores the nature of representation in the graphic arts. He writes that graphic representation is not a "mere representation of reality but a symbol system" (1972, 82). Children and adults do not imitate nature but they use graphic schemata acquired from cultural sources to represent nature in a medium. Not only do they not copy the outside world, but Gombrich feels that they do not copy an inside world of mental images as Piaget argues. People learn to draw from other drawings, not from nature or internal mental structures.

Goodman, N. Languages of Art, New York: Bobbs-Merril, 1968.

An extensive philosophical exploration of the symbol systems used in art. Goodman feels that art is not a copy or imitation of reality, but rather that representation involves the use of different symbol systems each with their own characteristics.

Goodman, N., Perkins, D., & Gardner, H. Basic abilities required for understanding and creation in the arts. Final Report, U.S. Office of Education Project No. 3-0283.

A progress report on Harvard's Project Zero which is interested in applying the findings of cognitive psychology to education in all of the arts and developing a better understanding of the symbol systems involved in each of the arts.

Golomb, C. The child as image-maker: The invention of representational models and the effects of the medium. Studies in Art Education, 1976, 17, 19-28.

Goodnow, J. Auditory - visual matching: Modality problem or translation problem? Child Development, 1971, 42, 1187- 1201.

Studied children's ability to visually represent sound patterns. Not until grade one could children utilize a long visual space to represent a long auditory space.

Goodnow, J. Children's Drawing. Cambridge, Massachusetts: Harvard University Press, 1977.

Goodnow, J., & Friedman, S. Orientation in children's human figure drawing: An aspect of graphic language. Developmental Psychology, 1972, 7:1, 10-16.

The authors tested the notion that children's drawings may be strongly affected by principles governing relationships among units in drawing. The results suggest this possibility and support the feasibility of using concepts from studies of spoken language for experimental studies of graphic performance.

Goodnow, J, Young, B.M. & Kvan, E. Orientation errors in copying by children in Hong Kong. Journal of Cross-Cultural Psychology, 1976, 7:1, 101-110.

Goodson, B. D. & Greenfield, P. M. The search for structural principles in children's manipulative play: A parallel with linguistic development. Child Development, 1975, 46:3, 734-746.

Greenfield, P. M. & Schneider, L. Building a tree structure: The development of hierarchical complexity and interrupted strategies in children's construction activity. Developmental Psychology, 1977, 13, 299-313.

Gregory, R.L. Eye and Brain. New York: McGraw-Hill, 1966.

Argues that perception is determined by the individual's internal mental processes as much as by the external environment. It puts forth a general theory of spatial illusions, relating them to the artist's problems of portraying three dimensions on a flat surface.

Gregory, R. L. The Intelligent Eye. New York: McGraw-Hill, 1970.

Gregory, R. L., & Gombrich, E. H. (Eds.). Illusion: In Nature and Art. New York: Scribner's 1974.

Grossman, M. Art education for the yound child. Review of Educational Research, 1970, 40, 421-427.

Reviews two approaches to art education: one which argues that the responsibility of the teacher is not to interfere and the other which argues that the teacher should interact with the child. Grossman favors the latter approach.

Hagen, M. A. Picture perception: Toward a theoretical model. Psychological Bulletin, 1974, 81, 471-497.

"J.J. Gibson's new theory of picture perception is described and a program of research within his framework is outlined."

Hagen, M. A. Development of ability to perceive and produce pictorial depth cue of overlapping. Perceptual & Motor Skills, 1976, 42, 1007-1014.

Hendrickson, M. & Warchol, B. Young children's social maturity and their drawings. Child Study Journal, 1974, 4:3, 115-123.

The authors study Lowenfeld's idea that drawings can be used as indicators of social maturity in young children. They found that children's drawings are not appropriate indicators of social maturity since there was no correlation between social maturity tests and abilities to represent social relationships via drawings.

Hilger, M. I., Klett, W. G. & Watson, C. G. Performance of Ainu and Japanese six-year-olds on the Goodenough Harris Drawing Test. Perceptual & Motor Skills, 1976, 42, 435-438.

Hochberg, J. & Brooks, V. Pictorial recognition as an unlearned ability: A study of one child's performance. American Journal of Psychology, 1962, 75, 624-628.

Hochberg, J. & Gellman, L. The effect of landmark features on mental rotation times. Memory & Cognition, 1977, 5, 23-26.

Hogg, J. (Ed.) Psychology and the visual arts. Harmondsworth, England: Penguin, 1969.

An anthology which includes work by Arnheim, Gombrich, Berlyne, Ehrensweig and others. It focuses more on art appreciation than production.

Hollenberg, C.K. Functions of visual imagery in the learning and concept formation of children. Child Development, 1970, 41, 1003-1015.

Hutt, C., Forrest, B & Newton, J. The visual preferences of children. Journal of Child Psychology & Psychiatry & Allied Disciplines, 1976, 17, 63-68.

Ibbotson, A. & Bryant, P.E. The perpendicular error and the vertical effect in children's drawing. Perception, 1976, 5, 319-326.

Ives, S.W. Children's ability to coordinate spatial perspective through structural descriptions. In D. Olson & E. Bialystok (Eds.), Explorations in Inner Space: Aspects of the Nature and Development of Spatial Cognition. Hillsdale, New Jersey: Lawrence Earlbaum Associates, in press.

A study of the role of symbolization in elementary school children's ability to indicate another's spatial perspective. Contrary to Piaget's findings, children were not egocentric if given the appropriate means of response.

Ives, S.W. A psychological and philosophical overview of young children's understanding of graphic lines as letters, words, and pictures: Implications for the teaching of reading, writing and drawing. Paper presented at the National Association for the Education of Young Children, Atlanta, November 1979.

Unlike most symbolic forms, lines can serve both linguistic and non-linguistic functions. This distinction is not inherent in the symbols themselves but in the perceiver's and producer's approach to such forms; only during the later preschool years do children begin to fully master the comprehension of linguistic and non-linguistic linear forms. Each approach calls on different cognitive skills and each tends to represent the world in different ways. Since reading, writing and drawing are central activities for all young individuals, it is important to interrelate and differentiate such activities in both the minds of children and the adults who teach them.

Ives, S.W. Preschool children's ability to coordinate spatial perspectives through linguistic descriptions. Paper presented at the American Educational Research Association, San Francisco, April 1979.

Preschool children have little difficulty with perspective problems if simply asked to respond in words and if the correct response matches a common verbal label (front, back, or side of an object). The role of media in cognitive development is discussed. Girls are also found to be better than boys in spatial perspective-taking at this age.

Ives, S.W. Parallels in language and drawing development: A search for underlying principles in symbolization. Paper presented at the Conference on Perception, Cognition, and Representation, Concordia University, January 1979.

Ives, S.W. & Houseworth, M. The role of canonical orientations in children's drawings of interpersonal relationships. Paper presented at the Northeast Educational Research Association, Ellenville, New York, October 1978.

A study of elementary school children's ability to depict relations between objects. The major developmental shift occurs between kindergarten and grade two; after this point children begin to graphically differentiate relationships between objects.

Ives, S.W., Houseworth, M. & Pond, J. The development of children's mapping abilities through drawings. MAEA Bulletin, Spring 1978, 4-6.

A developmental study of elementary school children's ability to produce spatial maps through verbal descriptions and drawings. Individual differences were found in the use of each media and in the type of information presented.

Ives, S.W. & Ives, K. Piaget and art education for the young child. Orbit 28, 1975, 6:3, 19-21.

This article explores the strengths and limitations of Piaget's work in relation to art education and presents some practical examples of its use in the preparation of preschool and elementary art curriculum.

Ives, S.W. & Rovet, J. Graphic orientations of familiar and novel objects at rest and in motion. Merrill-Palmer Quarterly, in press.

Ives, S.W., Silverman, J., Kelly, H. & Gardner, H. Artistic development in the early school years: A cross-media study. Paper presented at the American Psychological Association, New York, September 1979.

To study the development of artistry across media, 45 children divided between kindergarten, first and third grades were given tasks in drawing, clay, story-telling, and symbolic play, using spontaneous production, completion, assembly, and copying problems; the spontaneous tasks were repeated for two more years. Products were rated on competence, flavorfulness, and uniqueness; working styles were also analyzed.

Different patterns of development are found in each medium. The largest gains in drawing and clay occur between kindergarten and first grade, followed by either a leveling or decline. Language and symbolic play tasks showed continued development and a different pattern of working styles.

Ives, S.W. & Wilder, P. The child as producer, perceiver, and critic of the arts. In M. Harmoney (Ed.), Promise and performance: ACT's guide to TV programming for children. (Vol. II: The arts.) Cambridge, Massachusetts: Ballinger Press, 1979.

A theoretical and practical application of current research on child development in the arts to television programming possibilities for art education.

Ivins, W.M. Prints and visual communication. Cambridge: M.I.T. Press, 1953.

A history of printmaking through photography which discusses the impact of prints on science and art.

Jackson, J.P. The relationship between the development of gestural imagery and the development of graphic imagery. Child Development, 1974, 45, 432-438.

Kaplan, B. The mythical world of the child. AAAS Symposium, A Small Child's Alchemy, February 22, 1976.

Kellogg, R. Analyzing children's art. Palo Alto, California: National Book Press, 1969.

Like Jung, Kellogg feels that children's graphic representation is based on innate deep structures. She feels that young children see the paper as a ground for placing spontaneous scribbles called Placement Patterns and that these form the basis for developmental elaboration of their later graphic representation.

Kellogg, R. Misunderstanding children's art. Art Education, 1973, 26.

Kennedy, J. M. A psychology of picture perception. San Francisco: Jossey-Bass, 1974.

Presents a Gibsonian view of picture perception along with a comprehensive review of the literature to date and an interesting chapter on Rubin's figure-ground concept.

Klima, E. S. & Bellugi, U. Poetry and song in a language without sound. Cognition, 1976, 4, 45-97.

Examines sign language and argues that "attributes of this language predispose not only the language itself but also its art forms to certain special characteristics."

Koestler, A. The act of creation. New York: Macmillan, 1964.

In the first section the author presents a theory of creativity and examines it in light of humor, science, and art. In the second section he discusses creativity in relation to such issues as development, perception, motivation, and thinking.

Kolers, P. Some modes of representation. In P. Pliner L. Krames & T. Alloway (Eds.), Communication and affect: Language and thought. New York: Academic Press, 1973.

An illuminating discussion of the representational differences and similarities between pictures and words. The author argues against some of the traditional ways of differentiating pictures and words. He then proposes that pictures are semantically interpreted marks while printed words are syntactically interpreted pictures.

Koppitz, E. M. Psychological evaluation of children's human figure drawings. New York: Grune & Stratton, 1968.

Korzenik, D. Art and thinking: Undoing a prejudice. Massachusetts College of Art Journal, 1975, 20-22.

"Current psychology supports the use of sensory-motor materials and experiences for the development of mental processes. Teachers can help by abandoning prejudices and examining what children learn through the use of concrete materials."

Korzenik, D. Creativity: Producing solutions to a problem. Studies in Art Education, 1976, 17, 2.

"Certain mental and manipulative operations are demanded of the child as a means of solving a problem and experimentors can devise ways to determine these operations. However, in spontaneous visual art activity, problem is well-masked and it is difficult to ascertain the referents of the representation."

Korzenik, D. Drawing and socialization. Paper to be presented at the National Art Education Association, Houston, March 1978.

"Children's drawings are seen in the context of their social development. Hazards of instruction lie in favoring the results of one developmental stage, when it is inevitable that children must change and alter their drawing strategies."

Korzenik, D. Fusion and differentiation of writing and drawing processes in early childhood. Boston, MA: Massachusetts College of Art, Center for Visual Learning, 1978.

"Young children are known to confound two skills which they will later learn to differentiate. The conflicts and choices that result are discussed."

Korzenik, D. Historical perspective on the instruction of drawing via three psychological theories. Boston: Massachusetts College of Art, Center for Visual Learning, 1978.

"Three types of drawing instruction are derived from the psychological theories of Gibson, Gombrich, and Arnheim. Instruction appears to be only partial disclosures of a process that is far more complex than any single type of instruction."

Korzenik, D. Saying it with pictures. In D. Perkins & B. Leonard (Eds.) The arts and cognition. Baltimore: Johns Hopkins University Press, 1977.

Korzenik, D. Roletaking and Children's drawings. Studies in Art Education, 1973/74, 15, 3.

Korzenik, D. What art-makers teach. Massachusetts College of Art Journal, 1975, 28-33.

Kosslyn, S. M. Information representation in visual images. Cognitive Psychology, 1975, 7, 341-370.

Kosslyn, S. M., Heldmeyer, K. H. & Locklear, E. P. Children's drawings as data about internal representations. Journal of Experimental Child Psychology, 1977, 23, 191-211.

Kosslyn, S. M. & Pomerantz, J. R. Imagery, propositions, and the form of internal representations. Cognitive Psychology, 1977, 9, 52-76.

Kramer, E. Art a therapy with children. New York: Schnocken, 1972.

Kreitler, H. & Kreitler, S. Psychology of the arts. Durham, N.C.: Duke University Press, 1972. (Review by Arnheim in Contemporary Psychology, 1973, 18, 646-645.

Kubie, L. S. Neurotic disorders of the creative process. New York: Noonday Press, 1958.

Challenges the sometimes held notion that mental illness is necessary for creativity in the arts.

Kubie, L. S. The relation of art to psychotherapy. American Journal of Art Therapy, January 1973.

Kuhn, T. S. The structure of scientific revolutions. Chicago: University of Chicago Press, 1962.

Argues that scientific knowledge is not simply cumulative but rather proceeds through a series of successive world views. This concept has also been applied to the arts.

Laosa, L. M., Swartz, J. D. & Holtzman, W. H. Human figure drawings by normal children: A longitudinal study of perceptual-cognitive and personality development. Developmental Psychology, 1973, 8, No. 3, 350-356.

Laosa, L. M., Swartz, J. D. & Diaz-Guerrero, R. Perceptual-cognitive and personality development of Mexican and Anglo-American children as measured by human figure drawings. Developmental Psychology, 1974, 10, No. 1, 131-139.

Lark-Horovitz, B. & Norton, J. Children's art abilities; Developmental trends of art characteristics. Child Development, 1959, 30, 433-452.

Lark-Horovitz, B. & Norton, J. Children's art abilities: The interrelations and factorial structure of ten characteristics. Child Development, 1960, 31, 453-462.

These two studies present data which show that some characteristics of children's drawings appear at the same developmental period while others are independent of each other.

Lasky, R. E. The ability of six-year-olds, eight-year-olds, and adults to abstract visual patterns. Child Development, 1974, 45, 626-632.

Laurendeau, M. & Pinard, A. The development of the concept of space in the child. New York: International Universities Press, 1970.

An empirical replication of Piaget's work by the same title: see Piaget (1956).

Lepper, M. R. & Greene, D. Turning play into work: Effects of adult surveillance and extrinsic rewards on children's intrinsic motivation. Journal of Personality and Social Psychology, 1973, 31, No. 3, 479-486.

Lewis, H. (Ed.) Child art: The beginnings of self-affirmation. Diablo Press, 1966.

An anthology of writings by Arnheim, Kellogg, Herbert Read, Frank Barron, and others. It is primarily important for the essay by Henry Schaefer-Simmern, an influential art educator, whose book, The unfolding of artistic activity, is a classic in creative education. The anthology also gives a clear introduction to the positions of Herbert Read and Rhoda Kellogg.

Lewis, Hilda, and Livson, N. Correlates of developmental level of spatial representation in children's drawings. Studies in Art Education, 1967, 46-57.

The authors document the young child's ability to represent a cube, a pyramid, a pentagon, and a cylinder in drawing.

Also by Lewis:
Developmental stages in children's representation of spatial relations in drawings. Studies in Art Education, 1962, 3, 2, 69-76.

Spatial relations in drawings as a correlate of development and a basis for picture preference. Journal of Genetic Psychology, 1963, 102, 95-107.

The Relationship of picture preference to developmental status in drawing. Journal of Educational Research, 1963, 58, 43-46.

Spatial relations in children's drawings: A cross-generational comparison. Studies in Art Education, 1973-74.

This last study is an attempt to replicate Clark's (1897) study of three-dimensional representation.

Lieblich, A., Ninio, A. & Kugelmass, S. Developmental trends in directionality of drawing in Jewish and Arab Israeli children. Journal of Cross-Cultural Psychology, 1975, 6, No. 4.

Lomax, A. Special features of the sung communication. In J. Helm (Ed.), Essays on the verbal and visual arts: Proceedings of the 1966 Annual Spring Meeting of the American Ethnological Society, 1966, 109-127.

Lowe, M. Trends in the development of representational play in infants from one to three years - an observational study. Journal of Child Psychology and Psychiatry, 1975, 16, 33-47.

Studies the origins of symbolic play.

Lowenfeld, V. & Brittain, L. Creative and mental growth. (5th ed.) New York: Macmillan, 1971.

A long used work on art education and creative development. The authors trace stages in children's artistic development and present art ideas appropriate to each age level. Lowenfeld, is one of the major influences in art education.

Luquet, G. H. Les dessins d'un enfant. Paris: Alcan, 1913.

Luquet, G. H. Le dessin enfantin. Paris: Alcan, 1927.

One of the first to claim that children draw what they know rather than what they see. He devised a series of stages in children's drawings which influenced Piaget.

Lurcat, L. Etudies de l'acte graphique. Paris: Mounton, 1974.

Studies the genesis and differentiation of graphic activity in the child. The focus is on the spatio-motor factors involved in graphic activity as opposed to the figurative or expressive aspects of drawing and to the signifying aspects of writing. Child Development Abstracts, 1976.

Machover, K. Human figure drawings of children. Journal of Projective Techniques, 1953, 17, 5, 3-92.

Madenfort, D. Viktor Lowenfeld and aesthetic education. Art Education, 1973, 26, 2.

Mann, B. S., & Lehman, E. B. Transparencies in children's human figure drawings: A developmental approach. Studies in Art Education, 1976, 18, 1, 41-48.

Mandler, J. Some problems in the definition and measurement of imagery. Child Study, 1976, 47, 388-839.

Mandler, J. M., Seegmiller, Dale & Day, J. On the coding of spatial information. Memory & Cognition, 1977, 5(1), 10-16.

Manosevitz, M. & Prentice, N. M. Some Fantasy Characters of Young Children: An Examination of Children's Beliefs in Santa Claus, the Tooth Fairy, and the Easter Bunny. Presented at the Southwestern Psychological Association, Albuquerque, New Mexico, April 30, 1976.

Marmor, G. S. Development of kinetic images: When does the child first represent movement in mental images? Cognitive Psychology, 1975, 7, 548-559.

Marmor found that children as young as age five could use imagery to represent movement. Findings conflict Piaget and Inhelder's (1971) thesis that the use of such imagery doesn't occur until age seven or eight.

Marmor, G. S., & Zaback, L. A. Mental rotation by the blind: Does mental rotation depend on visual imager? Journal of Experimental Psychology: Human Perception and Performance, 1976, 2, 515-521.

The authors found that visual imagery is not a necessary component of a mental rotation tasks when it is presented in a tactile format.

McArthur, L. Z., & Eisen, S. Achievements of male and female storybook characters as determinants of achievement behavior by boys and girls. Journal of Personality and Social Psychology, 19 , 33(4), 467-473.

McGhee, P. E. Cognitive mastery and children's humor. Psychological Bulletin, 1974, 81(10), 721-730.

McGurk, H. & Jahoda, G. Pictorial depth perception by children in Scotland and Ghana. Journal of Cross-Cultural Psychology, 1975, 6(3), 279-296.

McLuhan, M. Understanding Media. New York: McGraw-Hill, 1964.

The Medium is the message.

McNiff, Shaun A. Art activities for evaluating visual memory. Academic Therapy 1976, 11(3), 283-296.

McWhinnie, H. J. A study of perceptual behavior in sixth grade children in relation to their behavior in art. Studies in Art Education, 1967, 9(1), 1-7.

McWhinnie, H. J. A third study of some relationships between creativity and perception in sixth grade children. California Journal of Educational Research, 1970, 21, 35-42.

McWhinnie, H. J. Perceptual learning in art. Possible or impossible? Scientia Paedagogical Experimentalis, 1973, 10, 161-169.

McWhinnie, H. J. A review of some research on aesthetic measure and perceptual choice. Studies in Art Education, 1965, 6(2), 34-41.

Merleau-Ponty, Maurice. "Cezanne's doubt." Sense and Nonsense, Northwestern University Press, 1964, 9-25.

An important essay on Cezanne in which Merleau-Ponty discusses Cezanne's approach to the representation of space. Cezanne said of the old masters, "They created pictures, we are attempting a piece of nature...They replaced reality by imagination and the abstraction which accompanies it." (P. 12). Merleau-Ponty writes that Cezanne wanted to go beyond the medium, but of course he could not accomplish this. However, by attempting to discard the old techniques of the medium and acquiring new ones, Cezanne made some important discoveries. "Cezanne discovered what recent psychologists have come to formulate. the lived perspective, that which we actually see, is not a geometric one or a photographic one." (p. 14).

Merleau-Ponty, M. The child's relations with others. The Primacy of Perception, Northwestern University Press, 1964.

Merleau-Ponty discusses the child's acquisition of language and perceptual development. He argues that this development is a product of the child's total relations with his environment, affective as well as cognitive. Merleau-Ponty criticizes psychologists who study a one dimensional view of the child and only look at the development of intellectual functioning.

Mervis, C. B., Catlin, J., & Rosch, E. Development of the structure of Color Categories. Developmental Psychology, 1975, 11(1), 54-60.

Metzler, J., & Shepard, R. N. Transformational studies of the internal representation of three-dimensional objects. In R.L. Solso (Ed.), Theories in Cognitive Psychology: The Loyola Symposium. Potomac, Md.: Lawrence Erlbaum Associates, 1974.

Millar, S. Visual experience or translation rules? Drawing the human figure by blind and sighted children. Perception, 1975, 4, 363-371.

Millar, S. Spatial memory by blind and sighted children. British Journal of Psychology, 1975, 66(4), 449-459.

Millar, S. Spatial representation by blind and sighted children. Journal of Experimental Child Psychology, 1976, 21, 460-479.

Miller, R. J. Cross-cultural research in the perception of pictorial materials. Psychological Bulletin, 1973, 80, 135-150.

Miller, S. A. Nonverbal assessment of Piagetian concepts. Psychological Bulletin, 1976, 83(3), 405-430.

Morewitz, S. J. On the psychology of the visual arts: An annotated bibliography, 1964-1976. MS. 1453. Catalog of Selected Documents in Psychology, 1977, 7, 29-30.

Morton, M. The arts and the Soviet child. New York: The Free Press, 1972.

A review of art education in the Soviet Union where there is a heavy emphasis on technical skills and a centrally controlled curriculum.

Munson, Richard. The Gustaf Britsch theory of the visual arts. Studies in Art Education, 1971, 12(2), 4-17.

Munson provides a review of the theories of Britsch which had an influence on such writers as Arnheim and Schaefer-Simmern.

Naeli, H. & Harris, P. L. Orientation of the diamond and the square. Perception, 1976, 5(1), 73-77.

Naumberg, M. An introduction to art therapy. New York: Teacher's College, Columbia, 1973.

A major work by one of the pioneers of art therapy.

Neisser, U. Cognition and reality: Principles and implications of cognitive psychology. San Francisco: Freeman, 1976.

Nelson, T. M. & Flannery, M. E. Instructions in drawing techniques as a means of utilizing drawing potential of six and seven year olds. Studies in Art Education, 1967, 8, 58-65.

Niederland, W. G. Psychoanalytic approaches to artistic creativity. Psychoanalytic Quarterly, 1967, 45(2), 185-212.

Ninio, A. & Lieblich, A. The grammar of action: "Phrase structure" in children's copying. Child Development, 1976, 47, 846-849.

Oelman, R. S. The psychology of monster figures. Confinia Psychiatrica, 1974, 17(3-4), 203-211.

Olson, D. Cognitive development: The child's acquisition of diagonality. New York: Academic Press, 1970.

Olson employs the concept that graphic representation involves the restructuring of the object to fit the medium (Arnheim and Gombrich) in developing his theory of cognitive development. This theory is particularly applicable to acts requiring representation such as drawing. Intelligence is viewed as skill in a cultural medium and it is the medium which provides the occasion for picking up the different perceptual information required to perform an act such as drawing.

Olson, D. (Ed.). Media and symbols: The forms of expression, communication and education. (N.S.S.E. Yearbook, 1974)

An anthology containing articles on the nature of symbol use in education. It includes several articles on visual symbols by such writers as Arnheim, Gombrich, and John Kennedy.

Olson, D. R. What is worth knowing and what can be taught. School Review, 1973, 82, 1, 27-43.

This essay is concerned with the role that experience, both direct and vicarious, plays in education. More specifically, it is concerned with the nature of the communication process and the kind of bias it has put and continues to put upon both the means and ends of education.

Olson, D. R. Mass media versus the schoolmen: The role of the means of instruction in the attainment of educational goals. Interchange, 1974, 5, 2, 11-17.

Olson, D. R. On the relations between spatial and linguistic processes. In J. Eliot and N. J. Salkind (Eds.), Children's spatial development. Springfield, Ill.: Thomas, 1975.

Olson, D. R. Towards a theory of instructional means. Educational Psychologist, 1976, 12, 1, 14-35.

This paper examines mental skills in general and literate, linguistic skills in particular, in terms of the means of instruction predominantly employed in formal schooling. It is argued that schooled uses of language and the forms of competence we call "intelligent" are in large part an unintended consequence of our reliance on literate means of instruction. The argument is supported by some experiments on instruction and on an examination of the cultural consequences of literacy.

Olson, R. K. Children's sensitivity to pictorial depth information. Perception and Psychophysics, 1975, 17, 59-64.

Oppenheimer, L. & Strauss, S. Filiation of operational structures and imagery. Journal of Genetic Psychology, 1975, 127, 179-190.

A study of the relationships between operational structures and imagery, using the symbolic media of drawings, gestural indications, and verbalizations. It was found that the use of symbolic media develop at different rates.

Ostroff, E. Humanizing environments: A primer. Cambridge, MA.: Massachusetts Department of Mental Health, 1977.

"This well illustrated book describes several educational settings for children with severe special needs. Play and the arts in teacher built environments are central to each program. The book also describes the training of the teams of teachers who created these programs."

Ostroff, E. Play and the arts for special needs. Boston, MA.: Massachusetts College of Art, Center for Visual Learning, 1978.

"A bibliography of articles, books, media, people, exemplary programs and organizations which focus on play and the expressive arts. A small but comprehensive listing which includes play therapy, the visual arts, creative movement, drama, music, and photography in the development of people with special needs."

Paivio, A. Imagery and synchronic thinking. Canadian Psychological Review, 1975, 16, 147-163.

Pappas, G. Concepts in art and education. London: Macmillan, 1970.

An anthology on art education which includes such writers as Lowenfeld, Dewey, Gombrich, Kepes, and Misner. It contains Gombrich's article, "Meditations on a Hobby Horse," which analyzes the nature of children's early symbolic play.

Pariser, D. Children's drawings of wrecked cars: A study in the development of form. Unpublished doctoral dissertation, Harvard Graduate School of Education, 1976.

Pariser, D. Copying and the +1 phenomenon: How do children benefit from copying adult work? Boston: Massachusetts College of Art, Center for Visual Learning, 1977.

"An argument is made for the utility of certain kinds of copying tasks as teaching tools. Findings for several areas in cognitive research suggest that exposing a child to a model of adult performance can often result in advances in the child's own performance."

Pariser, D. Comments on the Wilsons' iconoclasm: Problems with making-matching hypothesis. Art Education, 1977, 30, 5, 24-25.

"The author comments on the limitations of Gombrich's making-matching hypothesis as an explication for the process of drawing."

Pariser, D. Integrating new information in old schemata: Some contrasts. Paper to be presented at the National Art Education Association, Houston, March 1978.

"Elementary children's original drawings and copies are discussed in the context of Freeman/s model for drawing activity. This paper raises theoretical and applied issues in relation to the use of an old master drawing in an elementary art class."

Pariser, D. Children's drawings of wrecked cars: Age related differences in response to a drawing problem. Paper to be presented at the National Art Education Association, Houston, March 1978.

"A description of children's responses to a drawing problem. The paper focuses on developmental differences in solving the problem; a taxonomy of such solutions; and the implications for art teaching."

Peckham, M. Man's rage for chaos: Biology, behavior, & the arts. New York: Schocken, 1967.

Argues that while man needs order there is also a drive for chaos which is fulfilled through art.

Perkins, D. New art and the abominable snowman. Art Education, 1977, 30, 1, 13-17.

Perkins, D. Probing artistic process: A progress report from Harvard Project Zero. Journal of Aesthetic Education, 1976.

Perkins, D. N. How good a bet is good form? Perception, 1976, 5(4), 393-406.

Perkins, D. & Leondar, B. (Eds.) The arts and cognition. Baltimore: Johns Hopkins University Press, 1977.

Piaget, J. Play, dreams, and imitation in childhood. New York: Norton, 1951.

Piaget traces the origins of symbolic representation. Each symbolic act requires both form and content. The child's imitative act provides the form and the assimilated meanings acquired through symbolic play provides the content in early symbolic representation.

Piaget, J. & Inhelder, B. The child's conception of space. New York: Norton, 1956.

Piaget argues that an understanding of Euclidean space is not an innate trait of the child and the authors present a series of experiments to support this claim. Spatial understanding is acquired through the child's interaction with the environment. The child first acquires an understanding of topological relationships and only later at ages 8 or 9 can understand and coordinate Euclidean space.

Piaget, J. & Inhelder, B. Mental imagery in the child. London: Routledge & Kegan Paul, 1971.

Piaget studies the development of the child's ability to use mental imagery in thought and presents a series of interesting experiments to support his views. He finds that mental imagery is used as a representation in intellectual operations but is not a source for thought. The ability to use anticipatory images in movement does not occur until after the child has obtained concrete operations. The child's mental images prior to concrete operations are static and are not capable of representing movement.

Pick, H. L. & Pick, A. Sensory and perceptual development. In P.H. Mussen (Ed.), Carmichael's manual of child psychology (Vol. 1). New York: Wiley, 1970.

Pihl, R. O. & Nimrod, G. The reliability and validity of the Draw-A-Person Test in IQ and personality assessment. Journal of Clinical Psychology, 1976, 32(2), 470-472.

Pirenne, M. H. Optics, painting and photography. New York: Cambridge University Press, 1970. Review by Arnheim: Contemporary Psychology, 1972, 17, 298-299.

Looks at two questions: What would a picture have to look like to supply the same distribution of light as the natural scene it portrays. And what modifications are necessary to account for different viewing angles of the flat picture.

Pitts, V. P. Drawing the invisible: Children's conceptualization of God. Character Potential, 1976, 8(1), 12-24.

Pond, J. The arts and cognitive development: An argument for the arts in education. Boston: Massachusetts College of Art, Center for Visual Learning, 1978.

"Recent research in cognitive development provides arguments for the includion of the arts as a basic and vital subject in the school curriculum."

Pressley, G. M. Mental imagery helps eight-year-olds remember what they read. Journal of Educational Psychology, 1976, 68(3), 355-359.

Pylyshyn, Z. W. What the mind's eye tells the mind's brain: A critique of mental imagery. Psychological Bulletin, 1973, 80, 1-24.

Rand, C. Copying in drawing: The importance of adequate visual analysis versus the ability to utilize drawing rules. Child Development, 1973, 44, 47-53.

Rand studied the effects of methods designed to improve pre-school children's ability to analyze figures and to utilize drawing rules on the children's ability in figure discrimination and copying tasks. It was concluded that drawing rules are essential and that adequate visual analysis is a necessary but not sufficient prerequisite to the production of accurate copies.

Read, H. Education through art. London: Faber and Faber, 1945.

Read puts forth the Platonic thesis that art should be the basis for the natural education of the child. He then proceeds to defend this view using such idealistic theories as those of Rousseau and Jung. Art can be used to promote the natural creative powers of the child.

Riegel, K. F. The dialectics of human development. American Psychologist, 1976, 31, 689-700.

Ross, B. M. Preferences for nonrepresentational drawings by Navaho and other children. Journal of Cross-Cultural Psychology, 1976, 7(2), 145-156.

Rosch, E. Cognitive reference points. Cognitive Psychology, 1975, 7, 532-547.

Supports the hypothesis that natural categories (i.e. colors, line orientations) have reference points (i.e. focal colors, vertical and horizontal lines) in relation to which other examples of the category are judged.

Rosch, E. H. On the internal structure of perceptual and semantic categories. In T.E. Moore (Ed.), Cognitive development and the acquisition of language. New York: Academic Press, 1973.

Rosch, E. The nature of mental codes for color categories. Journal of Experimental Psychology: Human Perception and Performance, 1975, 1(4), 303-322.

Rovet, J. & Ives, W. Graphic orientations of familiar objects a developmental and cross-cultural study. Paper presented at the annual meeting of the Canadian Psychological Association, Toronto, 1976.

A series of five experiments which demonstrate that certain common objects tend to be represented in the same standard orientation by children and untrained adults regardless of age, and that these orientations convey implied information about the referents.

Sahlins, M. Colors and cultures. Semiotica, 1976, 16(1), 1-22.

Salome, R. A. The effects of perceptual training upon the two-dimensional drawings of children. Studies in Art Education. 1965, 7, 18-33.

Salome, R. A. Perceptual training: As a factor in children's art. Art Education, 1966, 19, 2[illegible].

Salome, R. A. & Szeto, J. W. The effects of search practice and perceptual training upon representational drawing. Studies in Art Education, 1976, 18(1), 49-54.

Salomon, G. Can we affect cognitive skills through visual media? Explication of a hypothesis and initial findings. AV Communication Review, 1972, 20, 401-423.

Salomon, G. Reexamining the methodology of research on media and technology in education. Review of Educational Research, Winter 1977, 47(1), 99-120.

Saltz, E., Dixon, D & Johnson, J. Training disadvantaged preschoolers on various fantasy activities: Effects on cognitive functioning and impulse control. Child Development, 1977, 48, 367-380.

Saltz, E. & Finkelstein, C. Does imagery retard conceptual behavior? Child Development, 1974, 45, 1093-1097.

Saraswathi, T. S. A short-term longitudinal study of the development of colour and form concepts in preschool children. Indian Journal of Psychology, 1974, 49(3), 231-236.

Sardello, R. A phenomenological approach to development: The contributions of Maurice Merleau-Ponty. Human Development, 1974, 17, 401-423.

The article considers the writings of Merleau-Ponty on child development and stresses the importance of the relationship between philosophy and science. The author criticizes a strictly empirical approach to human development. The article includes commentary on children's drawings and perception.

Schaefer-Simmern, H. The unfolding of artistic activity. Berkeley: University of California Press, 1970.

One of the classics in the development of children's art.

Scheffler, R. Z. The child from five to six: A longitudinal study of fantasy change. Genetic Psychology Monographs, 1975, 92, 19-56.

Schildkrout, M. S., Shenker, I. R., & Sonnenblick, M. Human figure drawings in adolescence. New York: Brunner/Mazel, 1972.

The authors argue that human figure drawings reveal levels of maturity and the presence of emotional or organic problems.

Shepard, R. N. & Judd, S. A. Perceptual illusion of rotation of three-dimensional objects. Science, 1976,

Shepard, R. N. & Metzler, J. Mental rotation of three-dimensional objects. Science, 1971, 171, 701-703.

Silverman, J., Winner, E. & Gardner, H. On going beyond the literal: The development of sensitivity to artistic symbols. Semiotica, 1976, 18(4), 291-312.

Silverman, J., Winner, E., Rosenstiel, A., & Gardner, H. On training sensitivity to painting styles. Perception, 1975, 4, 373-384.

Presents a training study with ten year olds to determine the steps children go through in learning to sort paintings by style and the relationship between this and other perceptual skills.

Silverman, R. Comparing the effects of two versus three dimensional art activity upon spatial visualization, aesthetic judgment and art interest. Unpublished doctoral dissertation, Stanford University, 1962.

Singer, J. L. The child's world of make-believe: Experimental studies of imaginative play. New York: Academic Press, 1973.

Reviewed by E. P. Torrance in American Educational Research Journal, Fall 1974, 11(4), 429-439.

Singer, J. L. Imagination and make-believe play in early childhood: Some educational implications. Journal of Mental Imagery, 1977, in press.

Sinha, D. & Misra, P. Use of pictorial depth cues in children's paintings: A developmental study. Indian Journal of Psychology, 1975, 50(3), 222-231.

Smart, R. C. & Smart, M. S. Group values shown in preadolescents' drawings in five English-speaking countries. Journal of Social Psychology, 1975, 97(1), 23-37.

Smith, N. Developmental origins of graphic symbolization in the painting of children three to five. Unpublished doctoral dissertation, Harvard University, 1972.

Using the developmental framework of Werner, Smith traces the differentiation and integration present in the early stages of children's painting during the discovery of symbolization. Briefly summarized in Franklin (1972).

Smith, N.R. Developmental origins of structure and variation in symbol form. In N.R. Smith & M.B. Franklin (Eds.), Symbolic functioning in childhood. Hillsdale, New Jersey: Erlbaum, 1979.

Examines the influences of the nature of materials on early symbolization and presents a framework for conceiving of the relationship of referent and symbol and the mode of correspondence between them.

Smith, N.R. How a picture means. New Directions for Child Development, 1979, 3, 59-72.

Discusses ways in which young children build up meaning in a picture through interaction with the materials.

Smith, N.R. Creativity in the paintings of children and artists. In C.E. Winsor (Ed.), The creative process. New York: Bank Street College of Education, 1976.

Smith, N.R. Classroom practice: Creating meaning in the arts. In J. Hausman (Ed.), Art, examplars, models, 1979, in preparation.

Smith, N.R. How is it that the blind can draw? Paper presented at the conference on Perception, Cognition and Representation, Concordia University, Montreal, January 1979.

Sparling, J. & Sparling, M. How to talk to a scribbler. Young Children, August, 1973, 333-341.

Spielman, K. S. Development of the perception and production of line forms. Child Development, 1976, 47, 787-793.

Presents evidence to support the concept that, for very young children, line is produced as a path before it is produced as a boundary.

Sproul, A. Teaching Art: Sources and resources. New York: Van Nostrand Reinhold, 1971.

A beautiful book which goes beyond the techniques used in teaching art to look at nature as a source for art. It includes sections on looking, sand, dirt, water, clay, texture, color and light, pattern and structure and a section on evaluating children's art.

Stacey, J. T. & Ross, B. M. Scheme and schema in children's memory of their own drawings. Developmental Psychology, 1975, 11, 37-41.

Looked at 6 year olds memory for their own drawings in two sessions in order to find evidence to support Piaget's concept of memory representation.

Stein, M. I. Stimulating creativity (Vol. 1). New York: Academic Press, 1974.

A comprehensive review of the literature in creativity research.

Sutton-Smith, B., Botvin, G. & Mahony. Developmental structures in fantasy narratives. Human Development, 1976, 19, 1-13.

"The paper examines structural paradigms for the analysis of narrative drawn from Levi-Strauss, Propp, and Piaget. It shows that all are successful in differentiating between the stories freely told by children of different age levels ranging from 2 to 12. The susceptibility of these idiosyncratic stories to such structural analysis implies that children are increasingly socialized into patterns of public legend and mythology over this age period."

Sutton-Smith, B. The folkgames of children. Austin: University of Texas Press, 1973.

Reviewed by Wayne Dennis in Contemporary Psychology, 1974, 19(7).

Swartz, J. D., Laosa, L. M. & McGavern, M. L. Spatial placement of human figure drawings as an indicator of cognitive and personality characteristics among normal young adolescents. Journal of Consulting & Clinical Psychology, 1976, 44(2), 307-308.

Taylor, I. A. & Getzels, J. W. (Eds.) Paradigm shift in creativity research? Perspectives in creativity. Chicago: Aldine, 1975.

Reviewed by J. R. Frederiksen in Contemporary Psychology, 1977, 22(7).

Thompson, D. On growth and form. Cambridge: Cambridge University Press, 1971.

A treatise on biological growth first published in 1917 which has served as a guide to artists interested in organic form and art.

Varley, W. H., Levin, J. R., Severson, R. A. & Wolff, P. Training imagery production in young children through motor involvement. Journal of Educational Psychology, 1974, 66, 262-266.

Vygotsky, L. The psychology of art. Cambridge, MA.: MIT Press, 1971.

Vygotsky, L. Thought and language. Cambridge, MA.: MIT Press, 1962.

Vygotsky argues that thought originates independent of language. Language is not simply a copy of thought but rather the restructuring of that knowledge in terms of the characteristics of the medium. Vygotsky's views on cognitive development are particularly appropriate to the study of artistic representation in different media.

Waddington, C. H. Behind appearance. Cambridge, MA.: MIT Press, 1970.

A study of the relationship between painting and the natural sciences in the twentieth century by one of the most influential geneticists in this century.

Wallach, M. A. & Bordeaux, J. Children's construction of the human figure. Perceptual & Motor Skills, 1976, 43(2), 439-446.

Wallbrown, F. H., & Huelsman, C. B. The validity of the Wallach-Kogan creativity operations for inner-city children in two areas of visual art. Journal of Personality, 1974/75.

Showed that strong support for the validity of the W-K operations in relation to grade 3 & 4 children's clay products.

Weinstein, E. & Kolers, P. The influence of symbol systems on perspective drawing: A developmental approach, Unpublished Paper, University of Toronto.

Studied the development of children's ability to represent three dimensional geometric objects via drawing.

Werner, H. Comparative psychology of mental development. New York: Science Editions, 1948.

The major statement of Werner's developmental psychology which focuses on all aspects of development rather than simply cognitive growth as in the case of Piaget. It is particularly relevant to the study of artistic development.

Werner, H., & Kaplan, B. Symbol formation. New York: John Wiley and Sons, 1963.

The book is an application of Werner's developmental theory to the growth of symbol use. The authors stress the role of symbol use in human activity and attempt to integrate both cognitive and affective aspects of development. The book also represents one of the few attempts to account for other symbol systems besides language and thus is important for studying symbol systems used in art.

White, J. The birth and rebirth of pictorial space. London: Faber and Faber, 1957.

White presents a sound historical treatise on the development of pictorial space in Western painting. He demonstrates that spatial perspective in painting began with the ancient Greeks and then later reemerged in the Italian Renaissance and French manuscript illuminations. The book provides an historical comparison to the emerging representation of space in the young child.

Wilson, B. Little Julian's impure drawings: why children make art. Studies in Art Education, 1976, 17, 45-62.

"Drawing, a nearly universal activity of young people, has been studied extensively, particularly with regard to its developmental stages: yet surprisingly, researchers have not addressed the fundamental question: Why do children draw in the first place? Until theories of child art attend to the factors that motivate children to make art, we will not have an adequate theory of child art. Indeed, an adequate and comprehensive theory would not only describe the developmental stages of drawing, hopefully much more fully."

Wilson, B., & Wilson, M. Visual Narrative and the artistically gifted. To be published in the Gifted Child Quarterly, Summer 1976.

Wilson, B., & Wilson, M. An iconoclastic view of the imagery sources in the drawings of young people. Art Education, January 1977, 30 (1).

Winner, E., Rosenstiel, A., & Gardner, H. The development of metaphoric understanding. Developmental Psychology, 1976, 12 (4), 289-297.

"Two tasks were used to assess children's capacities to interpret metaphoric statements. Subjects ranging in age from 6 to 14 years were required either to explain a metaphoric sentence or to select one of four possible paraphrases. There was a developmental trend toward appropriate apprehension of metaphor. Several steps preceeding mature comprehension were described: metonymic and primitve-metaphoric interpretations were frequent prior to the age of 10, and the youngest children sometimes interpreted metaphors as descriptions of magical situations. In general, cross-sensory metaphors proved easier to comprehend than psychological-physical metaphors. The results suggest certain cognitive prerequisites of mature metaphoric comprehension and help to clarify the ontogenetic relations among the abilities to produce, comprehend, and explicate the rationale of metaphoric language."

Wolf, D. & Gardner, H. Beyond playing or polishing: A developmental view of artistry. In J. Hausman (Ed.) Art, Examplars, Models. In press.

Argues that the child from two to five is like the artist as "player and dreamer" while the child in middle childhood is like the artist as "craftsman" and the adolescent is a combination of both these approaches to art. The authors make suggestions in this context for art education.

Wolf, D. & Gardner, H. Style and sequence in early symbolic play. To appear in M. Franklin & N. Smith, Early Symbolization, 1978, in preparation.

Looks at individual differences in children's symbolic play and finds that some children are more interested in patterns and relationships between objects whereas others are more interested in developing dramatic narratives in symbolic play.

Ziv, A. Facilitating effects of humor on creativity. Journal of Educationa Psychology, 1976, 68 (3), 318-322.

"The influence of listening to humor on creativity tests of adolescents was investigated. Two hundred eighty two tenth-grade students (138 boys and 144 girls) divided into four groups were given the Torrance Verbal Creativity Test in a Solomon-type design. The humorous record used in the experiment was chosen for the high laughter response (amplitude and duration). It was found that those adolescents who

listened to the record performed significantly better on a creativity test than control groups. Several explanations for the findings and some implications for the educational setting are proposed."